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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,357	11/12/2003	Shunpei Yamazaki	0553-0322.01	6785

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EXAMINER

GHYKA, ALEXANDER G

ART UNIT PAPER NUMBER

2812

DATE MAILED: 05/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,357

Applicant(s)

YAMAZAKI, SHUNPEI

Examiner

Alexander G. Ghyska

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-9, 20-23 and 28-44 is/are pending in the application.
- 4a) Of the above claim(s) 6-9 and 20-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 28-44 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

ALEXANDER GHYKA
PRIMARY EXAMINER

Av 2812
Alex Ghyska

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Applicants' response of February 22, 2005 has been considered and entered in the record. The Applicants' arguments are not considered persuasive for the reasons as discussed below, after the rejections of record.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 28, 31-32 and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki et al (6,140,667).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome

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either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The present claims generally require introducing a crystallization promoting material to a semiconductor film; crystallizing the semiconductor film by applying a heating gas; cooling the crystalline semiconductor film by applying a first cooling gas after the crystallizing; gettering the crystallization promoting material from the crystalline semiconductor film; and cooling the crystalline semiconductor film by applying a second cooling gas after the gettering.

Yamazaki et al disclose a crystallizing process, a cooling period to room temperature, gettering and a cooling period to room temperature after gettering, as required in present Claims 28 and 32. See Figure 18A and column 12, lines 30-35. Moreover, Yamazaki et al disclose nickel or iron as the crystallization promoting catalyst, as required in present Claims 31 and 36. See column 3, line 65 to column 4, line 5. Therefore, Yamazaki et al anticipate Claims 28, 31-32 and 36.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29-30, 33-35 and 37-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al (US 6,140,667) in view of Ueda et al (US 6,337,259).

Yamazaki et al is relied upon as discussed above. Moreover, Yamazaki et al disclose that the crystallization step occurs in an inert atmosphere (column 4, lines 12-17) and the gettering step occurs in a nitrogen atmosphere (column 5, lines 1-10).

The afore mentioned claims differ from the Yamazaki reference in that Yamazaki et al does not disclose that helium (a noble gas is inert), that the cooling periods occur in nitrogen/ helium atmospheres, and the formation of an amorphous film on top of the crystalline film to getter the nickel (catalyst) from the crystalline substrate.

Ueda et al disclose crystallizing a semiconductor film using a nickel catalyst, and gettering the crystalline substrate by forming an amorphous substrate and heating to remove the catalyst from the crystallized surface as required in Claims 37-43. See the Abstract, column 6, lines 10-30. Moreover, Ueda et al disclose that nitrogen and helium are known to be inert gases. See column 5, lines 25-33.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to use an amorphous layer to getter the impurities from a crystalline layer, as this method is known in the art as evidenced by the Ueda et al reference. The use of a known process (placing an amorphous layer on top of a crystalline layer) for its known purpose (gettering) is *prima facie* obvious. Moreover, it would have been obvious for one of ordinary skill in the art to use helium or nitrogen as the inert gas called for in Yamazaki et al, as Ueda et al clearly disclose the inert properties of nitrogen and helium

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in crystallization and gettering processes. Furthermore, it would have been obvious for one of ordinary skill in the art to cool the substrates in the process of Yamazaki et al in the atmospheres in which they were treated (nitrogen or inert atmospheres used for crystallization or gettering) and arrive at the presently claimed limitations, especially in light of the disclosure of Ueda et al that the afore mentioned atmospheres are inert. A cooling step in an inert atmosphere would be *prima facie* obvious in view of the disclosures of the Yamazaki et al and Ueda et al references.

Response to Applicants Arguments

Applicants' argue that Yamazaki '667 discloses cooling, but does not disclose the specific step of "intentionally cooling the film by applying a first and then a second cooling gas" as required in the present claims. The Examiner maintains that the word "applying" can be reasonably construed as "placing next to" or "putting in contact with". Claims are to be reasonably construed in light of the Specification. Yamazaki et al clearly intends to cool the crystalline semiconductor film, as the steps of cooling are clearly disclosed. See Figure 18A . Moreover, this cooling is not done in a vacuum, but in the inert gases which are "applied" to the surface as discussed above in the text of the rejection. Furthermore, the first gas can be the same composition as the second gas. With respect to the Ueda reference, the Applicants merely restate the arguments with respect to Yamazaki. Therefore, the rejections of record are maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Thursday during general business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AGG
May 12, 2005

ALEXANDER GHYKA
PRIMARY EXAMINER

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Alex Ghyska